

INSTALLATION MANUAL NORTH AMERICA

Terra DC Wallbox

North America Three-phase Version

Revision 3.0



Revision level	Change	Date
2.1	Added revision level to document and added revision table	04-15-2021
2.2	Added bulletin to make sure L1,L2,L3,N,PE are all connected prior to powering up	08-05-2021
2.3	Added new gun holder standard pictures	10-22-2021
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2.7	Added instruction to mounting gun holster	04-05-2022
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2.9	Energy Star logo on the cover page	05-05-2023
3.0	Par. 5.4.1 note about number of people required to lift the DCWB	06-20-2023

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ATTENTION:

YOU **MUST** CONNECT L1, L2, L3, N AND PE WIRES BEFORE POWERING UP THIS CHARGER.

FAILURE TO DO SO WILL CAUSE DAMAGE TO THE CHARGER AND VOID WARRANTY

L1, L2, L3, N AND PE LABELS ARE ON THE TERMINAL BLOCK



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Glossary

AC

Alternating Current.

CCS

Combined Charging System. This is the name of the charging protocol of European and North American car makers.

CHAdeMO

DC fast charging method for electric vehicles.

Contractor

Entity hired by the owner / site operator to do engineering, civil and electrical installation work.

DC

Direct Current.

EV

Electric Vehicle.

Grid provider

Company responsible for the transportation and distribution of electricity.

HMI

Human Machine Interface; the display/screen on the charger.

NOC

ABB Network Operating Centre; remotely checks the correct functioning of the charger.

Owner

The legal owner of the charger.

OCPP

Open Charge Point Protocol. Open standard for communication with charge stations.

PE

Protective Earth.

PPE

Personal Protective Equipment.
Equipment such as safety shoes, helmet, glasses, gloves.

RCD

Residual Current Device. Breaks the connection if a residual current is detected.

RFID

Radio-Frequency IDentification. RFID is a communication technology by means of radio waves to transfer data over a very short distance between a reader and an electronic tag or card.

Site operator

This entity is responsible for the day to day control of the charger. The site operator can be the owner, but not necessarily.

User

The owner of an electric vehicle, who uses the Charge Station to charge that vehicle.

1 Introduction

1.1 Preface

This guide provides an overview for the installation of the Terra DC Wallbox. The Terra DC Wallbox charging station is an easy to install DC fast charger for electric vehicles. Fast chargers are electrical installations with high electric currents. Therefore, the installation must be planned carefully, and must be done by certified personnel only (according to local standards). Local regulations shall take precedence if they list different installation requirements than prescribed in this Installation Manual.

The Terra DC Wallbox is offered in a variety of configurations and with multiple connector types. The different versions are described in section 1.3.

Before installing the Terra DC Wallbox, read this installation guide carefully and attentively. Be sure to follow all instructions when installing the charger. ABB is not responsible for any damage caused by not following or incorrectly executing the instructions described in this manual.

1.2 Intended document users

This document is intended to be used by:

- Customers who have purchased a Terra DC Wallbox or customers in the process of ordering and require additional details on installation.
- Contractors who are responsible for site preparation and/or installation of a Terra DC Wallbox.
-

1.3 Terra DC Wallbox hardware ordering details

ABB's Terra DC Wallbox single-phase is offered in the following configurations:

- Terra DC Wallbox C UL
- Terra DC Wallbox CJ UL

Where:

C	CCS-1 (Combo) standard
J	CHAdeMO standard
CJ	CCS-1 (Combo) standard and CHAdeMO standard

All variations are offered with charging cable lengths of 7 meters (23 ft).

The Terra DC Wallbox comes with the standard connector holsters as shown.

Charging cable type	ABB order code (*)
CCS-1	ABB6AGC076604
CCS-1 (**)	ABB6AGC109619
CHAdeMO	ABB6AGC102972

(*) the codes are referred to the spare parts. Minimal gun holster is included in the packaging

(**) CCS-1 minimal holster to be use in combination with products:

ABB6AGC107062	TWB UL 24 C 7TM-7M-0-0
ABB6AGC107061	TWB UL 24 C 3TM-7M-0-0
ABB6AGC107315	TWB UL 24 CJ 7TM-7M-0-0



Optional connector holsters shown below may be purchased separately with the order code details shown below.

Charging cable type	ABB order code
CCS-1	ABB6AGC076604
CCS-1 (*)	ABB6AGC109619
CHAdemo	ABB6AGC076601



(*) CCS-1 optional holster to be used in combination with products:

ABB6AGC107062	TWB UL 24 C 7TM-7M-0-0
ABB6AGC107061	TWB UL 24 C 3TM-7M-0-0
ABB6AGC107315	TWB UL 24 CJ 7TM-7M-0-0

1.4 Signs

The following signs are used on the equipment and in this manual:



DANGER
Hazardous voltage
Identifies a hazard that could result in severe injury or death through electrocution.



WARNING
Various
Identifies a hazard that could result in severe injury or death.



WARNING
Rotating parts
Identifies a hazard that could result in injury due to the presence of rotating or moving parts.



WARNING
Pinch Hazard
Identifies a hazard that could result in injuries, in which some body parts are pinched or crushed.



CAUTION
Various
Identifies a hazard that could result in damage to the machine, other equipment, and/or environmental pollution.



CAUTION
Environmental damage
Identifies a hazard that could result in environmental damage and/or environmental pollution.



NOTICE
Contains remarks, suggestions or advice.

1.4.1 Owner responsibilities

The owner and site operator are required to:

- Operate the charge station with the protective devices installed and to ensure all protective devices are correctly installed after carrying out installation or maintenance work.
- Write an emergency plan that instructs people what to do in case of emergency.
- Prepare the site where the charge station will be installed according to the requirements described in this guide.
- Ensure there is sufficient space around the charger to carry out maintenance work.
- Appoint a person responsible for the safe operation of the charge station and for the coordination of all work.

The owner is cautioned that changes or modifications not expressly approved by ABB could void the owner's authority to operate the equipment and ABB's warranty policy.

Neither ABB nor its affiliates shall be liable to the purchaser of this product or third parties for damages, losses, costs or expenses incurred by purchaser or third parties as a result of: an accident, misuse or abuse of this product or unauthorized modifications, repairs or alterations to this product, or failure to strictly comply with ABB's operating and maintenance instructions.

1.4.2 Tilting and handling



WARNING
Heavy equipment
The Terra DC Wallbox weighs approximately 70 kg. Follow the handling Instructions:
1. Two people are recommended for the installation and wall-mounting of a Terra DC Wallbox.
2. Do not drop the Terra DC Wallbox.

1.4.3 Sharp edges



WARNING
Sharp metal edges
There could be sharp metal edges inside the Terra DC Wallbox. It is recommended to wear mesh protecting gloves when working inside the charger.

1.4.4 Electric hazards



DANGER
Hazardous voltage
The Terra DC Wallbox contains conductors under hazardous electrical voltages. The grid terminals on the internal DIN rail may carry hazardous voltages, even if all circuit breakers are switched off.

1.4.5 Installation safety



DANGER

Hazardous voltage

Instructions:

1. Always switch off the input circuit feeding the unit, (external disconnect or breaker) before performing any installation, disassembly, repair or replacement of components. Follow appropriate requirements for safe work practices, including but not limited to NFPA-70e.
2. Perform a voltage check to ensure electrical power is disconnected from the system.
3. Only ABB certified technicians should commission the Terra DC Wallbox.
4. When the system is in an open or dangerous condition, do not allow unqualified persons to go near it. Instruct and warn people about the potentially harmful high voltages.
5. The installation and maintenance personnel must supply their own lighting equipment because the Terra DC Wallbox has no lights inside the cabinet.
6. Always connect the Protective Earth (PE) first, before connecting the other power input wires.
7. Be sure to properly and securely reassemble the Terra DC Wallbox's enclosure after installation or service operations.
8. When handling the equipment, a proper lifting device should be used in accordance with your local EHS policies.

1.5 Environment and disposal of waste



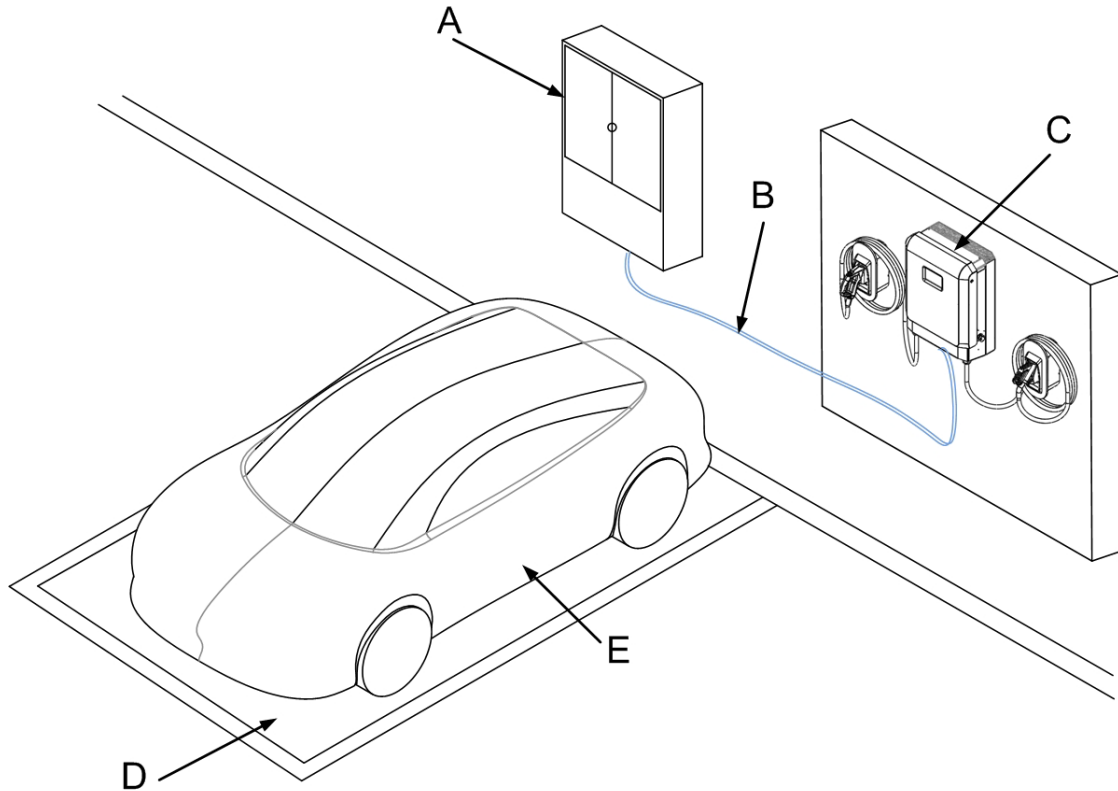
NOTICE

Always follow the local rules and regulations regarding disposal of any (non-reusable) Terra DC Wallbox parts.

2 Description of the product

2.1 Overview of the system

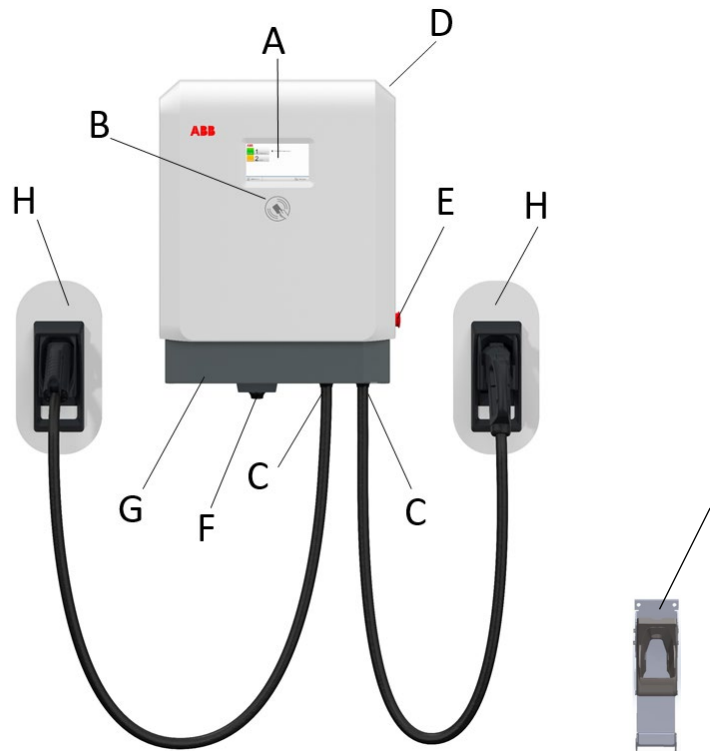
2.1.1 Complete overview



Example of a complete installation

- A Power distribution board of the owner
- B Cables in conduit
- C Terra DC Wallbox
- D Parking space for charging
- E Electric vehicle

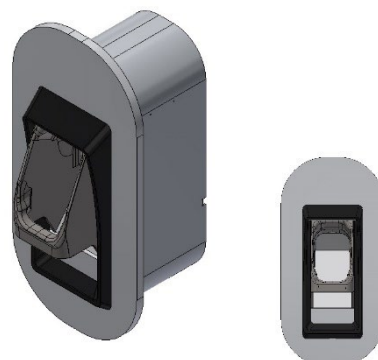
2.1.2 External view



- | | | | |
|---|-------------------|---|---|
| A | Display / HMI | E | Emergency stop button |
| B | RFID card reader | F | AC input connection point for Conduit |
| C | DC Charging cable | G | Air inlet |
| D | Air outlet | H | Optional Holster (purchased separately) |
| | | I | Standard Holster (included) |

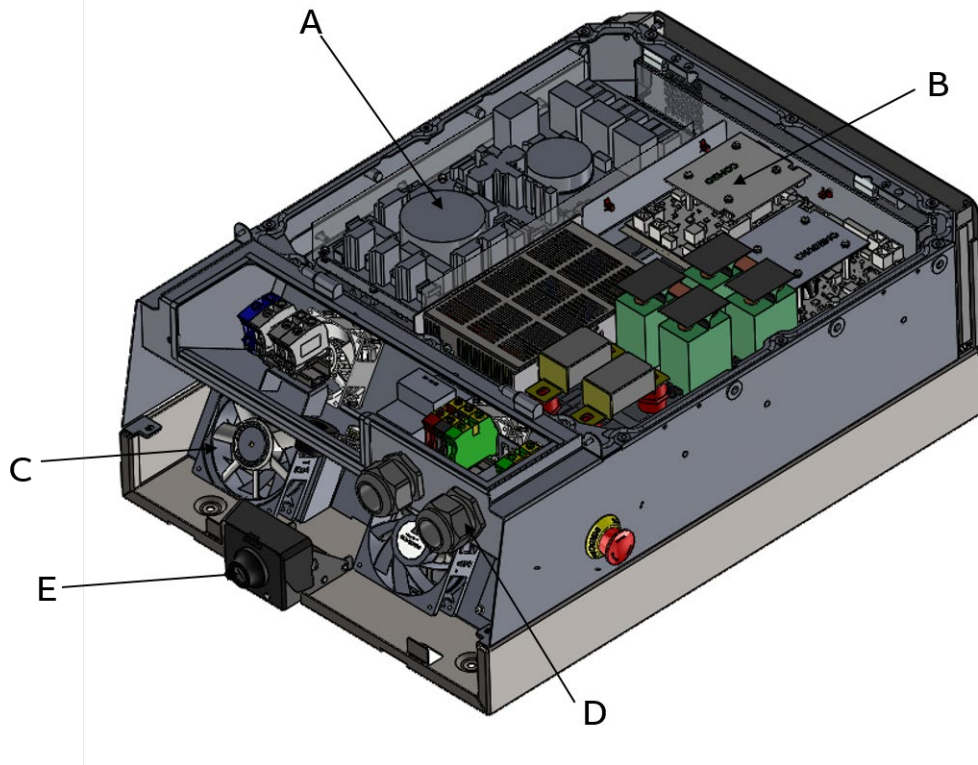


Standard charging cable holster supplied with DC wallbox



Optional charging cable holster sold separate from DC wallbox

2.1.3 Inside view



A AC input board
B CPI and IMI boards
C External Fan (2x)

D Cable gland for DC output(2x)
E Cable gland for AC input

3 Installation Planning and Design

This section provides several considerations for the DC Wallbox installation planning and design, which are to be made by the customer to ensure a successful project.

3.1 Internet connection

ABB requires an internet connection to the DC Wallbox to conduct remote service operations including, oversight of the product during the warranty period, diagnosis and troubleshooting of issues, and performing software firmware update. Not having internet connection to the DC Wallbox may severely impact, or even void, the product warranty and/or ABB's service level agreement (SLA).

It is the installer's responsibility to ensure reliable internet connection to the DC Wallbox is made. Contingency planning and the associated costs are the responsibility of the installer.

3.1.1 Internet via cellular connection

The preferred method of establishing internet connection to the charger is using the charger's standard featured hardware with ABB's Charger Connect service offering, which provides internet access via Vodafone's 4G LTE wireless network.

In the USA, Vodafone primarily roams on the AT&T and T-Mobile 4G LTE networks. It is expected that a cellular availability test is performed prior to construction to ensure there is reasonable signal quality to at least one of the AT&T and T-Mobile 4G LTE bands 2 (1900 MHz), 4 (1700/2100MHz), or 12 (700 MHz).

The signal strength must be greater than -85dbm and should be measured with a cellular network signal meter, such as a Squid-4G or Sure Call device. Handheld mobile phones are not recommended for assessing signal strength since they are not reliable measuring devices.

The DC Wallbox only supports SIM cards provided by ABB. Customer procured SIM cards are not supported.

3.1.2 Internet via ethernet connection

Internet connection to the charger may be performed by connecting an ethernet cable to the charger from other on-site IT infrastructure. However, due to the scope of work required for integrating this solution to ensure secure communication, this method is typically not preferred.

ABB may require additional commissioning fees if ethernet cable method for establishing internet is used, depending on the situation. Please contact your ABB sales representative for more details.

See sections 3.2.5 and 3.2.6 for more details on connection of conduit carrying ethernet cable and specification of the ethernet cable.

3.2 Electrical requirements

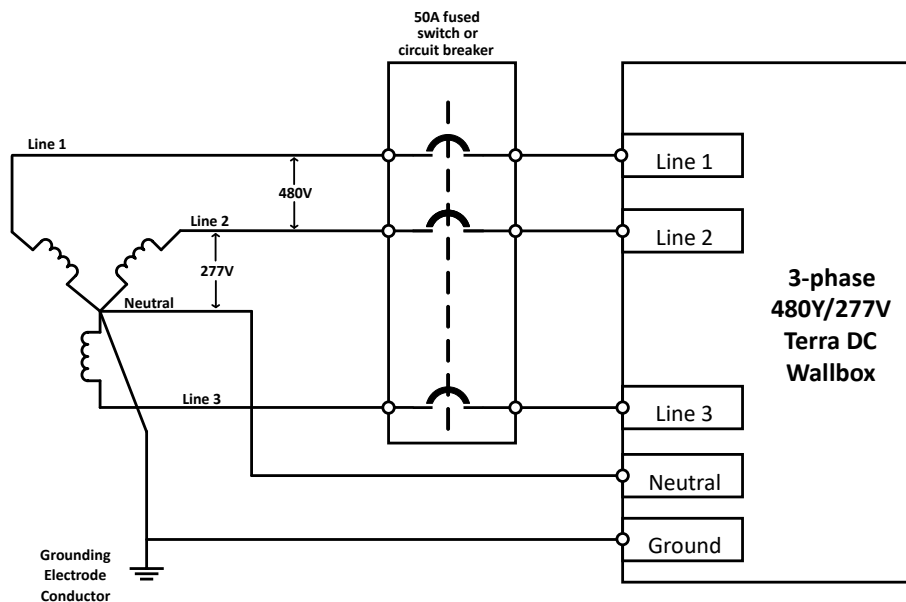


CAUTION

The installation company is responsible to design and install the electrical installation according to the local regulations.

3.2.1 Required electrical grid configuration

It is essential that the DC Wallbox 3-phase input variant is installed in the proper electrical grid configuration. The allowable grid configuration is shown in the figure below.



Electrical grid configuration required for 3-phase, DC Wallbox UL variant (3 ϕ , 480Y/277V input)

NOTICE:

The grid connections shown for the various configurations of the DC Wallbox are mandatory. Failure to adhere to these instructions may partially or fully void the product warranty, result in a costly site visit to reconfigure the grid configuration, and/or cause several site visits for the DC Wallbox commissioning. ABB is not responsible for scheduling delays and additional costs from not properly planning the installation. If ABB is contracted to perform the DC Wallbox commissioning, ABB observes the right to charge additional money for more than one site visit required for the commissioning due to an initial, improper installation of the DC Wallbox.

Important steps to ensure project success include:

- 1. Identify the grid configuration at the location where the DC Wallbox will be installed. If the grid configuration available is not okay for use with the DC Wallbox, then determine how to establish the required grid connection. A transformer solution offered by ABB is available to derive the required grid configuration when the required grid configuration is not available. Contact your local ABB sales representative for more details.**
- 2. Select the 1-phase or 3-phase variant of the DC Wallbox according to Section 1.3 titled Terra DC Wallbox hardware ordering details based on Step 1 above.**
- 3. Carefully execute a project plan to ensure the correct variant of DC Wallbox is used on the project and that the project site's grid configuration is compatible with the DC Wallbox.**
- 4. Verify the actual grid configuration the DC Wallbox is installed in matches the described criteria during the DC Wallbox commissioning.**

3.2.2 Overcurrent protection device

Each variant of the DC Wallbox is recommended to be fed by the circuit breaker or fuse ratings shown below.

- 3-phase, 480Y/277V DC Wallbox variant: 3-pole, 50A circuit breaker or fuses

3.2.3 Conduit for power input wires

Each variant of the DC Wallbox supports up to a 1-1/4" trade size conduit connection.

3.2.4 Specification for power input wires

The exact size and type of wires used must be defined by the customer and be protected by customer provided overcurrent protection according to local codes and regulations.

The input terminals for 3-phase UL variants of the DC Wallbox accept a range of wire sizes from 10 AWG to 0 AWG. Wire terminals are rated 75C.

The 3-phase UL variant DC Wallbox requires Three (3) phase wires, One (1) neutral wire, and One (1) wire for protective earth. (3W+N+G)

All wires for 3-phase variants of the DC Wallbox may connect directly to the ABB provided terminals, with exception to the protective earth wire. The protective earth wire requires for the installer to crimp a terminal onto it using the terminal manufacturer's recommended crimp procedure and tool.

The integrity of the electrical grounding is essential. Ensure that the equipment grounding terminal is used in the device and an actual grounding conductor is installed to provide a path back to the source upstream panel. (Do not use the conduit or raceway as the sole equipment grounding conductor).

3.2.5 Conduit for ethernet cable

The DC Wallbox does not have a hole designated for a conduit carrying only an ethernet cable to connect to. If ethernet cable solution is required for an installation, please contact your ABB sales contact person to review ethernet cable entry solutions.

3.2.6 Specification for ethernet cable

If the cellular connection is not available, ethernet connection must be made to the charger using a shielded 8P+PE ethernet cable with RJ45 connectors. Additional recommendations include:

- Maintain distance of 75 meters or less. Distances over 75 meters require a custom engineered solution.
- Minimum bandwidth:
upload: 128 kb/s
download: 4 Mb/s
- 99.9% availability
- 600V rated cable that may route beside input power wires for short distances

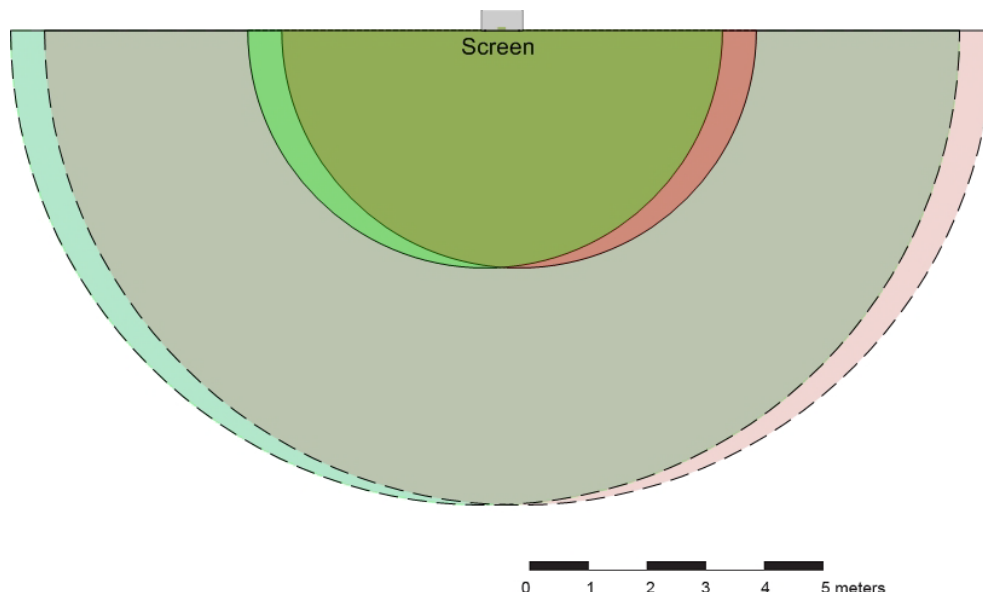
3.3 DC Wallbox placement

Placement of the Terra DC Wallbox must be carefully determined by accounting for charging cable reach, DC Wallbox position with respect to parking space, bollards and wheel stops, ventilation and working clearances, and other local codes and regulations (e.g. ADA requirements in the USA).

3.3.1 Charging cable reach

The Terra DC Wallbox charging cables are available in lengths of 3.5 or 7 meters. The charging cables exit the charger enclosure on both the right and left sides. The cables and the connectors mounted on the cables are different depending on the charging standard and vary in flexibility.

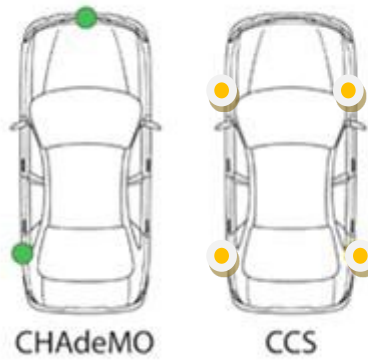
The figure below shows an example of a dual connector charger with both types of connector and the corresponding reach area. The green circle with a continuous line describes the CHAdeMO cable 3.5m and the red circle with a continuous line describes the CCS cable 3.5m. The broken lines indicate the same cable types with a length of 7 meters (23 ft).



3.3.2 DC Wallbox position with respect to parking space

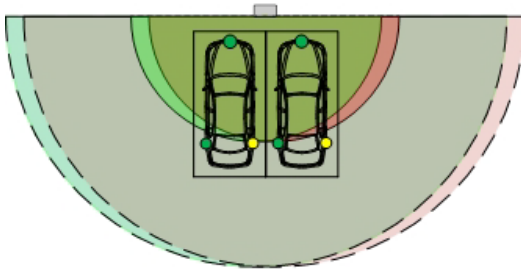
The charging inlets on a vehicle can be located at different positions depending on the manufacturer. The most common vehicles have inlets located either on the front or in the back on either the left or right side.

Charging inlet locations of important EVs

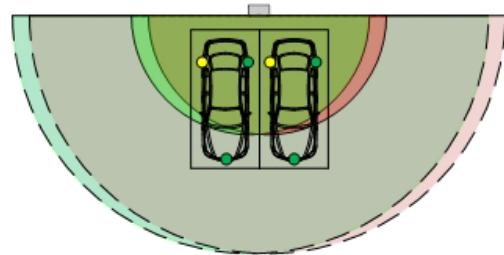


This makes some charger placements with respect to the parking space more favorable than others. Keep this in mind when designing a site. Below are examples of possible situations:

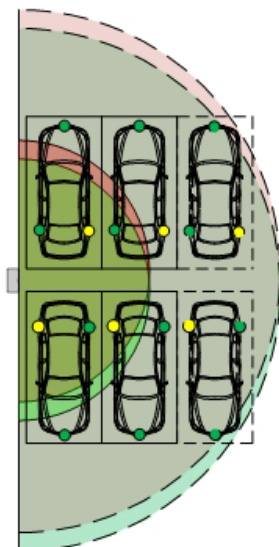
Forward parking



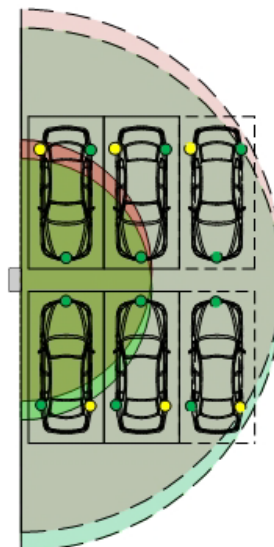
Backward parking



Lateral Backward parking



Lateral Forward parking

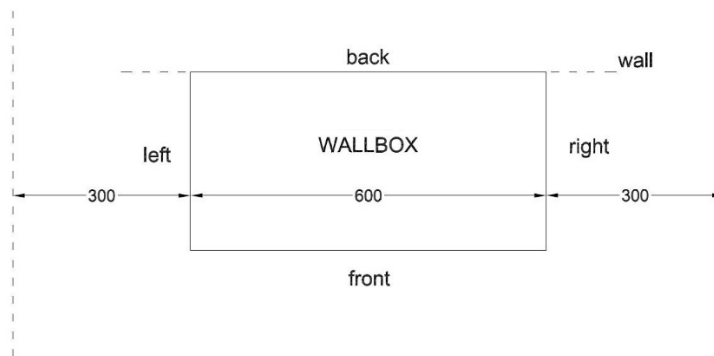


3.3.3 Required space for installing and maintaining the DC Wallbox

The Terra DC Wallbox requires a minimum space of 36" x 48". This space is calculated as follows:

- Charger size (H x W x D): 30.3 x 23 x 11.8 in
- Bottom side 23.6" (15.75" from the Terra DC Wallbox in order to avoid obstacles for the electrical connection).
- Left and right side 300mm/12", in order to operate without obstacles on the lateral side of the Terra DC Wallbox.

Note: The below dimensions are shown in millimeters.



3.3.4 Ventilation and airflow required for the DC Wallbox

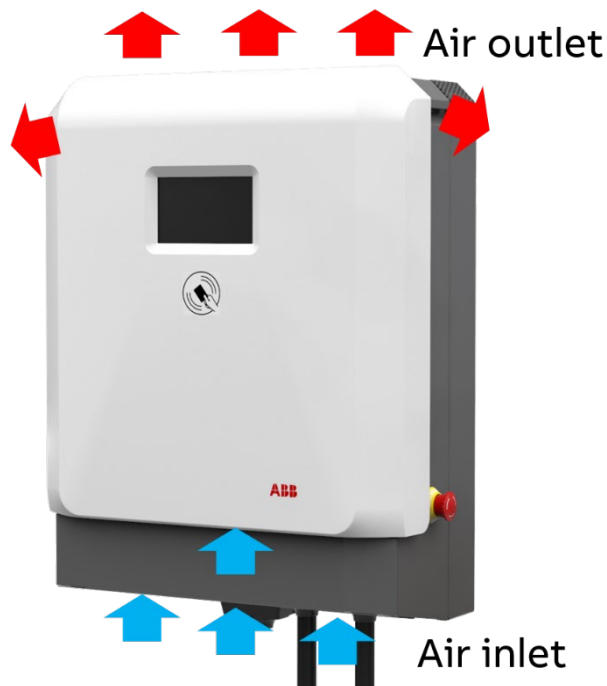
The Terra DC Wallbox has an air inlet on the bottom side and an outlet on the top side.



NOTICE

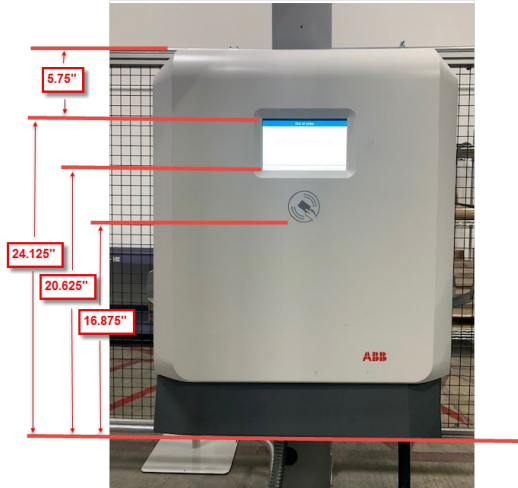
Free air flow

If necessary, take precautions to prevent snow or objects from blocking the inlets and outlets.



3.3.5 Considerations for where to position DC Wallbox vertically

The below picture shows the height of the operable parts and display screen from the top and bottom of the DC Wallbox's enclosure (not accounting for piece on enclosure where the customer conduits connect to). It is the installer's responsibility to use this information to define the height at which to install the DC Wallbox from the ground and to ensure compliance to local codes and regulations (e.g. **ADA requirements in the USA**).



4 Installation instructions

4.1 About construction

The construction phase includes all work required to prepare the location and ensure it is ready for the placement and connection of the Terra DC Wallbox charger. The construction phase can start when:

- The wall preparation work is done.
- All necessary permits are granted.
- The grid connection is available.

4.2 Instruction for a wall bearing

1. Drill and tap 4 holes and insert the plug for fixation in the wall at the indicated positions (refer to technical drawing in the Appendix A par. 10.1). For safety purposes, the number of recommended fixing screws is 4xST7.3x70. This is assuming the appropriate type of wall plugs are used (depends on wall's characteristics, structure and type). It is the installer's responsibility to choose an appropriate wall plug and to plan for a load of 820 N on each plug.
2. When selecting the area along the wall for installation, ensure the required free spaces for the Terra DC Wallbox cables are available (refer to section 3.4).

4.2.1 Mounting on a pedestal

The Terra DC Wallbox can also be mounted on a pedestal. In order to achieve a safe installation, the minimum set of requirements are included in Appendix C – Pedestal requirements). For the ABB pedestal solution, contact your local ABB sales representative.

4.3 Power feed

The power cable enters the charger from below. Use conduit, foam, or proper cable lugs and glands to prevent animals from entering the AC or Ethernet cable inlets. (Reference Section 3.2 for feeder specifications)

4.4 Internet connection

The preferred method of communication is the wireless 4G modem integrated into the charger. A customer SIM card is not required. A subscription for the SIM card is provided by ABB for select countries.

If there is no wireless signal available, a standard wired internet connection is required. (Reference Section 3.1, 3.2.5 and 3.2.6 for wiring and connection methods)

- The connection must be available for the ABB service engineer and the NOC (Network Operation Center).
- Please contact ABB (800.825.2556 option 2) for a specific configuration.

If a separate internet connection is not used, please ensure the cable entry hole is closed to retain the IP54 grade of the cabinet and prevent insects and small animals from entering the cabinet.

5 Receiving, Placing and connecting

5.1 Receiving the Wallbox

The product is delivered by a transport company to a warehouse where it will be handed over.

Transporting the Terra DC Wallbox to its final location (last mile service) is not included standard in the order.

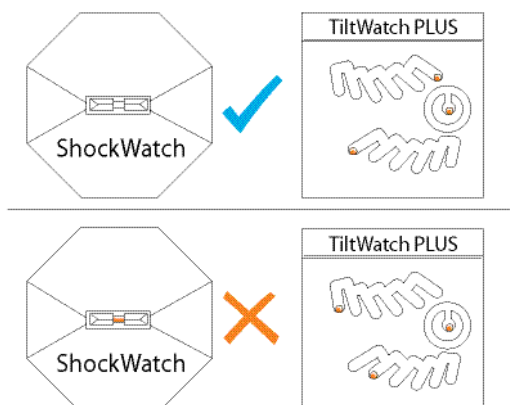


NOTICE

The delivery truck unloads the pallet carrying the Terra DC Wallbox. The movement of the Terra DC Wallbox to its final location is the responsibility of the customer / contractor.

Ensure the Terra DC Wallbox has not been shaken or tilted.

- The cabinet is equipped with Shock Watch and Tilt Watch indicators.



Checking the Shock Watch and Tilt Watch PLUS sensors:

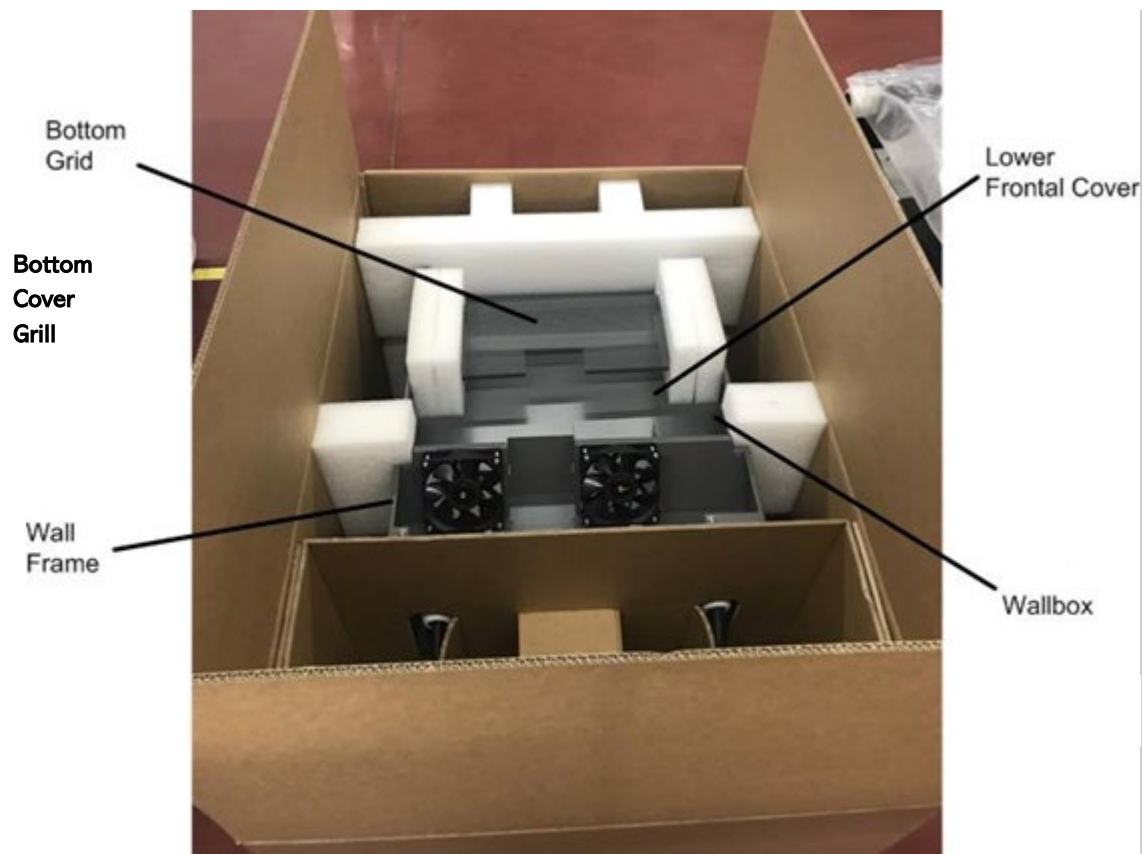
If the Shock Watch indicator is red, or the Tilt Watch PLUS indicator is tilted over 30°:

1. Do not refuse the delivery / receipt.
2. Make a notation on the delivery receipt and inspect cabinet for damage.
3. If damage is discovered, leave cabinet in original package and request immediate inspection from carrier within 3 days of delivery.
4. Contact your local ABB office.

5.2 Unpacking the charging and mounting preparations

5.2.1 Unpacking

The packaging of the Terra DC Wallbox can be removed without the use of tools. Follow local regulations on disposal of packaging material.



1. Remove the plastic protection profiles.
2. Remove the bottom air grate grill and the lower frontal cover.
3. Remove the wall frame.
4. Remove the Terra DC Wallbox. (USE CAUTION TO NOT DAMAGE THE E-STOP BUTTON ON THE SIDE OF THE ENCLOSURE)
5. Remove the AC ferrite core link to the outlet gun cable (assembly position shown at paragraph 5.4.2)
6. For all components above, remove the shrink wrap.

5.2.2 Mounting preparations

Unpack the IP BOX and verify all the following items are present:

- Wall frame
- Frontal cover
- Bottom grid cover

5.3 Move cabinet to position

5.3.1 Options

A properly rated lifting devices should be used to move the Terra DC Wallbox from the delivery truck to the installation location.



DANGER
Hazardous voltage
Ensure the product's power supply group main switch is set to the OFF position. Perform a voltage check to verify there is no electrical power on the cables or on the system. Secure the product from resetting.



NOTICE
Warranty
Damage due to moving the cabinet to its position is not considered a warranty issue.

5.4 Mounting the Terra DC Wallbox

Preconditions:

- Tools: Spanner/Wrench size 17.
- Guide the power cable through the central cable gland, and the Ethernet cable if required, through the smaller gland. Install the power wiring in the conduit/raceway that is connected to the unit. See below image for a typical conduit install make ready for installation of the Wallbox.



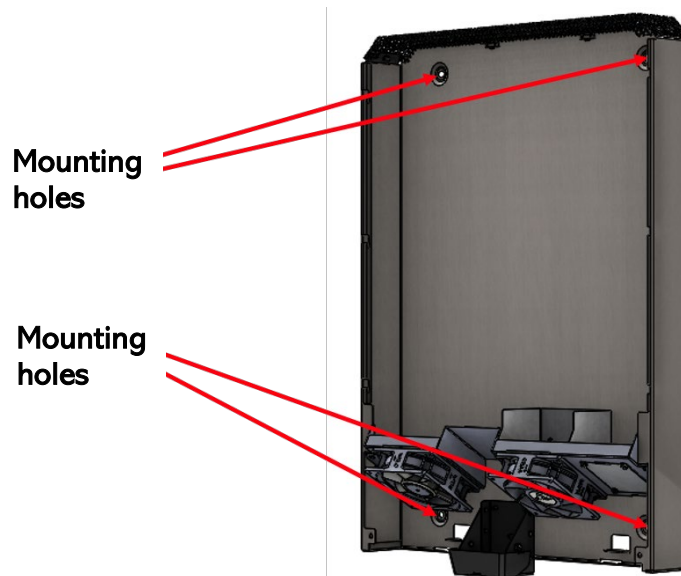
5.4.1 Mounting the Terra DC Wallbox



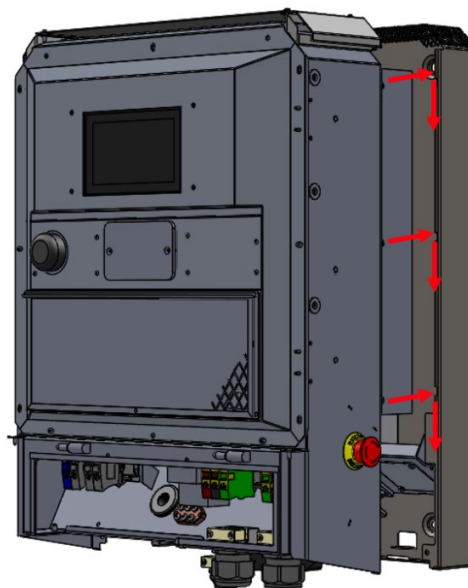
NOTICE

The minimum number of people required to lift and install the Terra DC Wallbox must be determined based on the relevant local regulation with taking into account the maximum allowed weight per person as well as the usage of the appropriate and suitable lifting equipment. The definition of the exact lifting equipment and working method for lifting is the responsibility of the installation contractor.

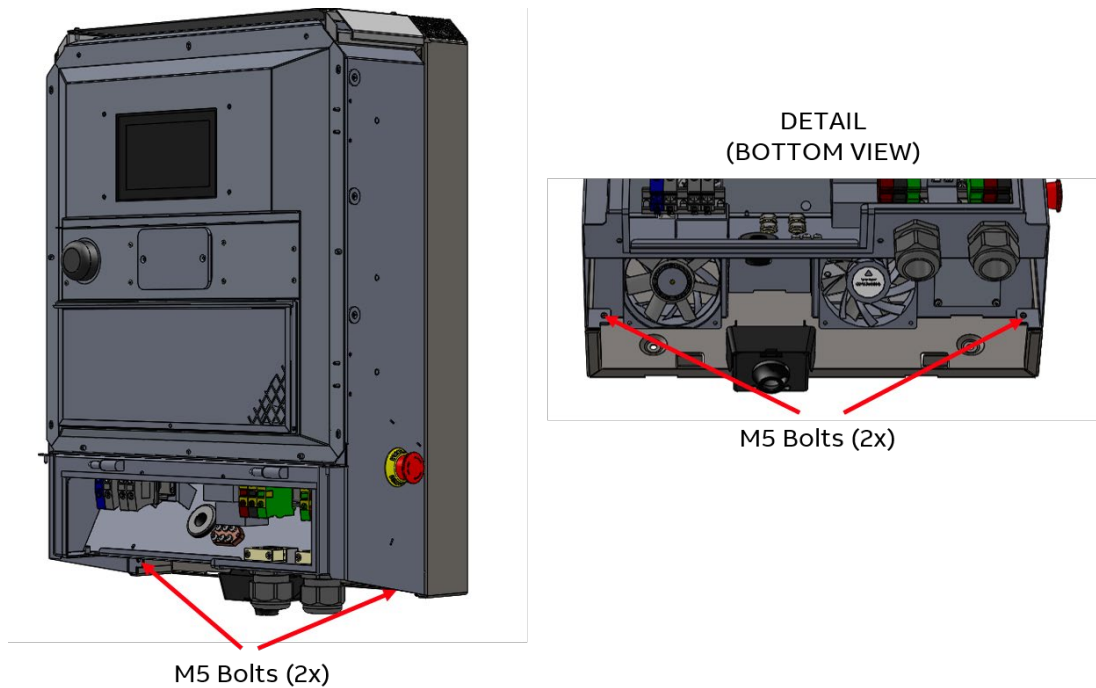
1. Carefully lower the Terra DC Wallbox onto its location.
2. Ensure cable(s) are not entrapped.
3. Place the wall frame in the correct position on the wall bearing by aligning the four holes of the charger with the corresponding holes on the wall bearing.
4. Tighten the four screws with stainless steel 8.8 hexagonal bolts.



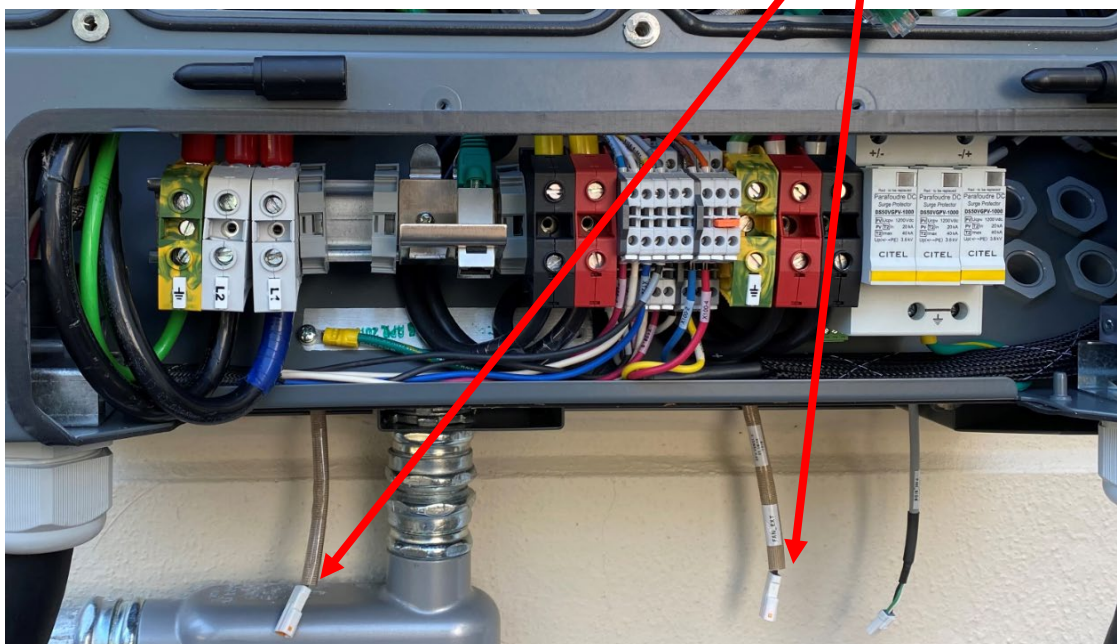
5. Place the unit on the wall frame by correctly aligning the 6 bolts (3 for each lateral side).



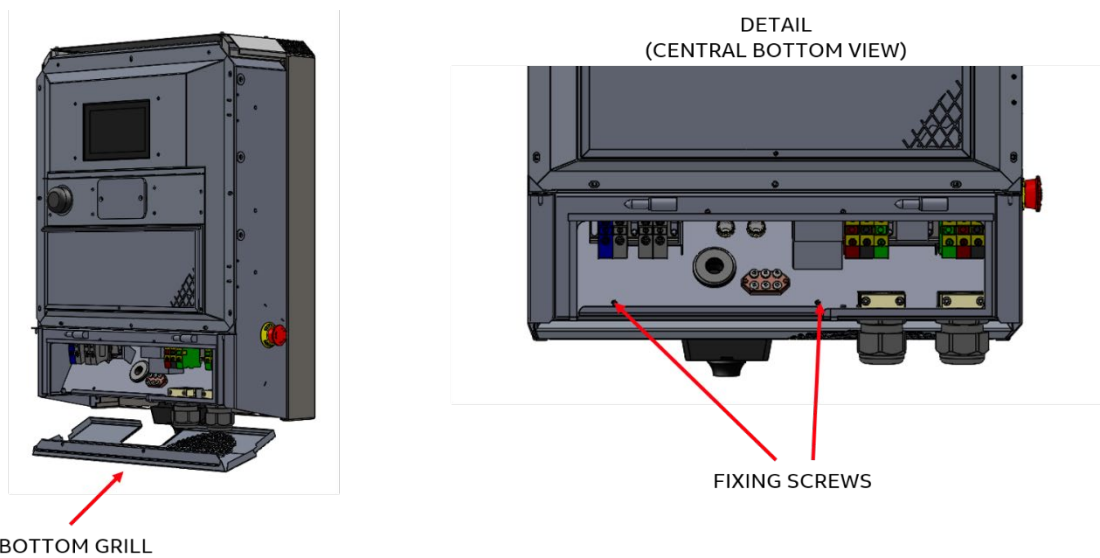
6. Tighten the two M5 bolts on the lower side of the unit. Pay attention to the internal fan power supply cable. **CAUTION: DO NOT SET SMALL OBJECTS ON TOP MESH COVER, ITEMS MAY FALL INTO THE COOLING FINS OR FAN COMPONENTS.**



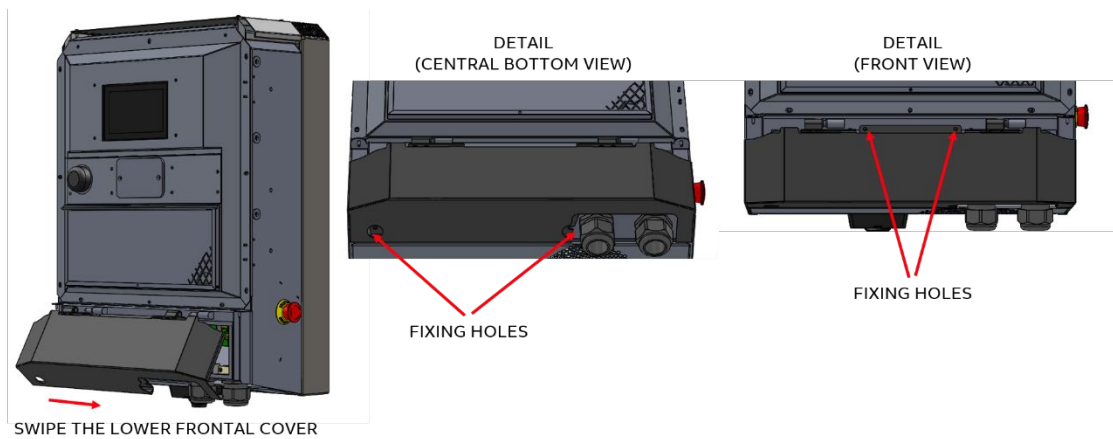
7. Let the auxiliary power supply cable pass through the central gland and tighten it.
8. **IMPORTANT**, connect both of the cooling fans to their power connections before proceeding to close the covers. There are two connectors one for the left fan and one for the right fan.



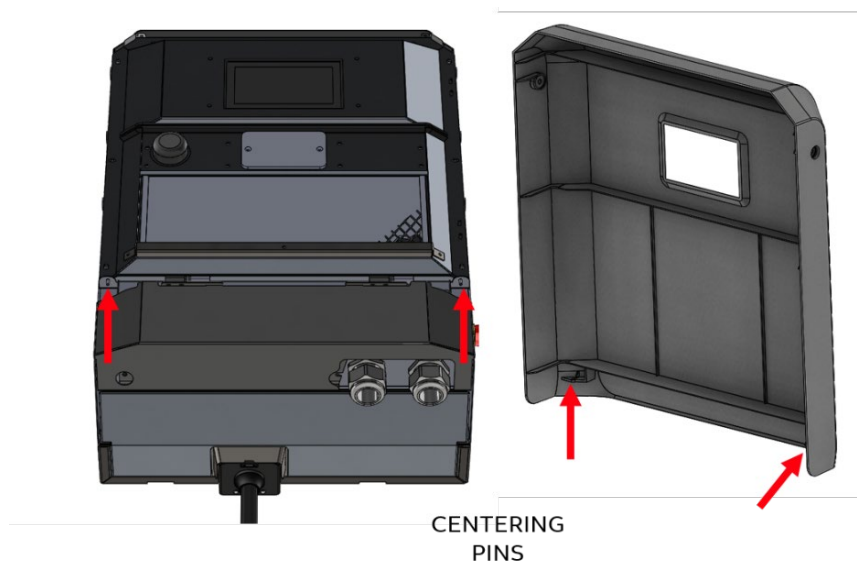
9. AFTER the completing wiring terminations, take the bottom cover grill and put it on the lower side of the unit and fix it by tightening two screws as shown in the following picture. Please note the 3-phase and 1-phase versions have a slightly different bottom grill assembly



10. Take the lower frontal cover and place it on the lower side of the unit. Secure it in place by tightening the two screws.



11. Center the holes on the plastic cover with the pins on the box.



12. Place the central cover on the unit and secure it in place by tightening the two screws located on the left and right side of the cover. Center the bottom pins, rotate the cover, and tighten the 2 lateral screws.



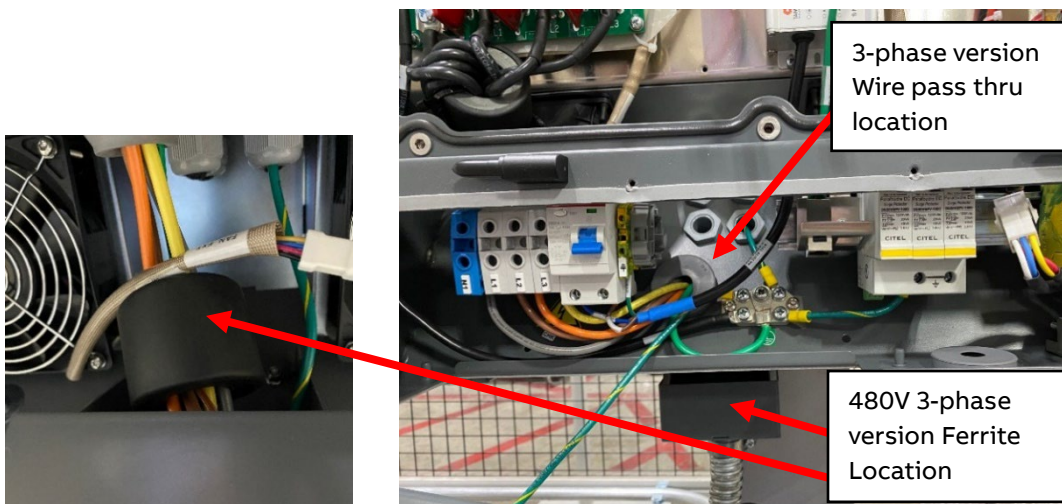
5.4.2 Install cable gland(s) or connect conduit to the unit.

The maximum diameter of the grid cable is 32 mm. The opening is pre-punched for a 1.25" trade size conduit. The minimum diameter of the grid cable is 22 mm with the standard fitted cable gland insert.



Conduit Install shown as a comparison

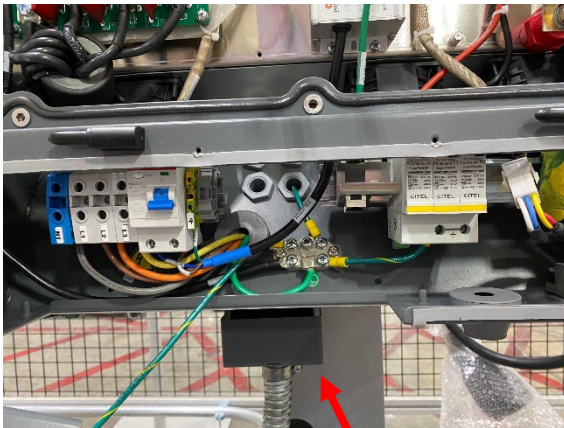
- Slide the cable inside the grommets, ensure at least 10mm of cable external jacket inside the box (see notes at the end of this section, before sliding the cable inside the grommet. Allow at least 24 inches of wire from the conduit entry point to allow enough wire to route thru the internal grommet/cable glands and wrap around to the terminal blocks. (For the 3-phase version, remember to route the wires thru the ferrite)



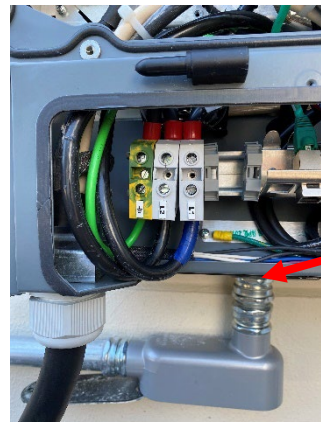
NOTE 1: For 3-phase versions a ferrite core is provided with the Wallbox (plastic bag within the package or strapped to the CCS-1 cable) and needs to be installed in commissioning phase. The Ferrite needs to be inserted in the AC in cable and located in the screw cable cover (see picture above, left). **THE FERRITE IS REQUIRED TO MAINTAIN THE WARRANTY.**

NOTE 2: Two floating grounding cables are provided that are connected to the ground node. One cable must be connected between the to the wall frame PEM the other to the front lower cover in order to guarantee equal ground potential (see picture above, right).

2. Push the cables back through the gland plate, until sufficient cable length is left to reach the cable terminals. Ensure the PE cable is longer than the other cables.



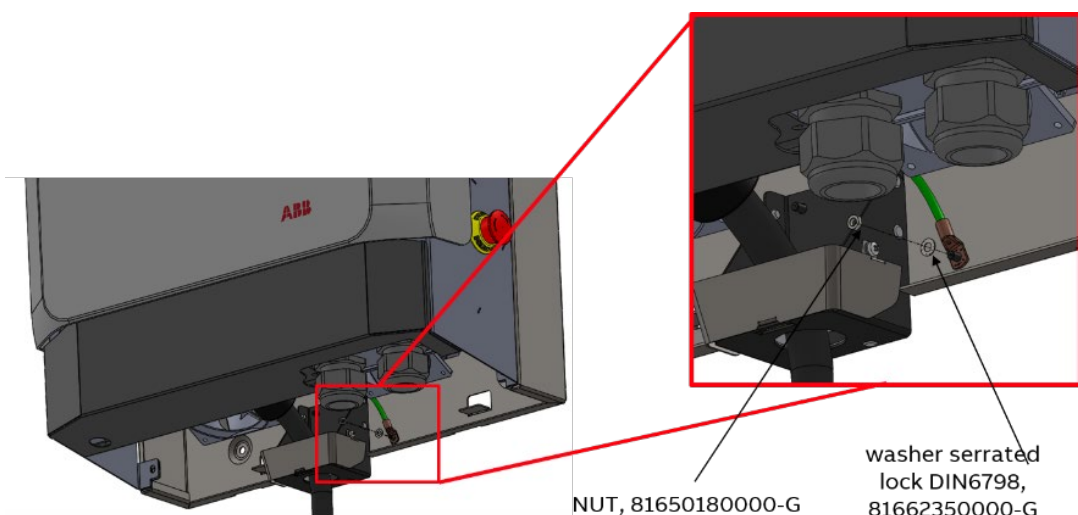
3-Phase Connection using flexible



Conduit Installation 1.25" secured to bottom mounting area. 1-phase Version Shown

3. Slide the cable cover and tighten the two screws.

If a wired internet connection is not used, please ensure the cable entry hole is closed, to assure the IP54 grade of the cabinet, and prevent insects and small animals to enter the cabinet.



5.5 Connect cables

5.5.1 Connect PE of power cable

Preconditions:

- Tools: Wire stripper pliers; wire-end lug pliers; wire-end lug.



DANGER

Hazardous voltage

Make sure that the main switch of the power supply group for the product is set to the OFF position. Perform a voltage check and make sure that the electrical power is disconnected from the system. Follow recommended **NFPA-70e** procedures.

1. Cut the PE wire of the power cable to the correct length (longer than the other phases) to reach the PE connector.



NOTICE

For safety, it is recommended that the PE wire is longer than the phase wires. This ensures the PE wire will be the last wire connected if the Terra DC Wallbox is moved by a collision.

2. Use wire stripper pliers to remove 0.75 (20 mm) of the insulation from the end of the PE wire and attach the cable lugs.
3. Pull the cover away from the connectors and remove them.
4. Loosen the bolts of the PE connector on the ground block.
5. Attach the PE wire onto the PE block.
6. Tighten the bolts. The advised torque value is 2 Nm.

5.5.2 Connect power cable

Preconditions:

- Tools: Wire stripper pliers; wire-end lug pliers; wire-end lugs.



DANGER

Hazardous voltage

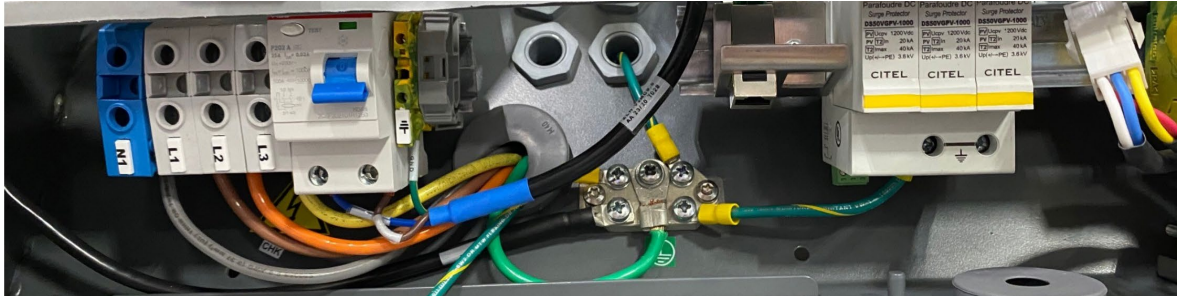
Ensure the product's power supply group's main switch is set to the OFF position. Perform a voltage check and ensure the electrical power is disconnected from the system.

7. Cut the 3 phase wires and the neutral wire of the power cable to the correct lengths to reach the connectors.
8. Use wire stripper pliers to remove 0.75 in (20 mm) of the insulation from the ends of the wires insert and terminate on the appropriate terminal block
9. Pull the covers away from the connectors and remove them.
10. Loosen the bolts of the connectors.

11. Attach the four wires on to their connectors as indicated on the label on the relative terminal block (see the following picture as example).

- From left to right for the 3-phase unit (as showed in the following picture):

N - terminal block blue, L1 - terminal block grey, L2 - terminal block grey, L3 - terminal block grey



12. Tighten the bolts. The advised torque value is 2.9Nm.

5.6 Instruction for Mounting the DC Wallbox Gun Holders

5.6.1 General

This document is intended to provide an instruction for service team / installers in order to be able to properly install the terra DC wallbox gun holders.

5.6.2 General description

The Terra DC wallbox is provided with two types of gun holders. A standard gun holder is provided with all the DC wallboxes. The standard Terra DC wallbox gun holder is illustrated in Fig.1 and Fig.2. An optional gun holder is also available as an optional / spare part and can be ordered as external kit. The optional gun holder is illustrated in Fig. 3 and 4. All the above described gun holders include adapters for CCS or Chademo charging guns.

5.6.3 Mounting instructions

The gun holders described above are intended for a very simple installation. Standard gun holder is provided with 3 holes for wall hooking while optional one is provided with a wall mounted hooking bar (10 in Fig.3) to be mounted to wall. The recommended dowels to be used are of 10 size for both cases.



Figure 1: Series production Terra DC wallbox gun holder (Chademo model).



Figure 2: Series production Terra DC wallbox gun holder (CCS model).

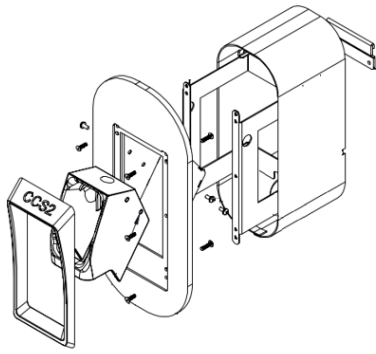


Figure 3: Terra DC wallbox optional gun holder.

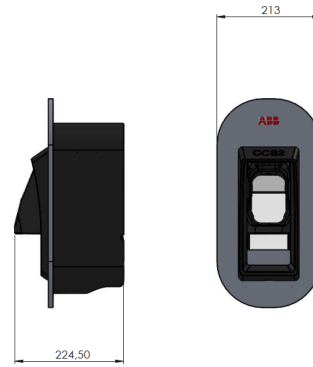
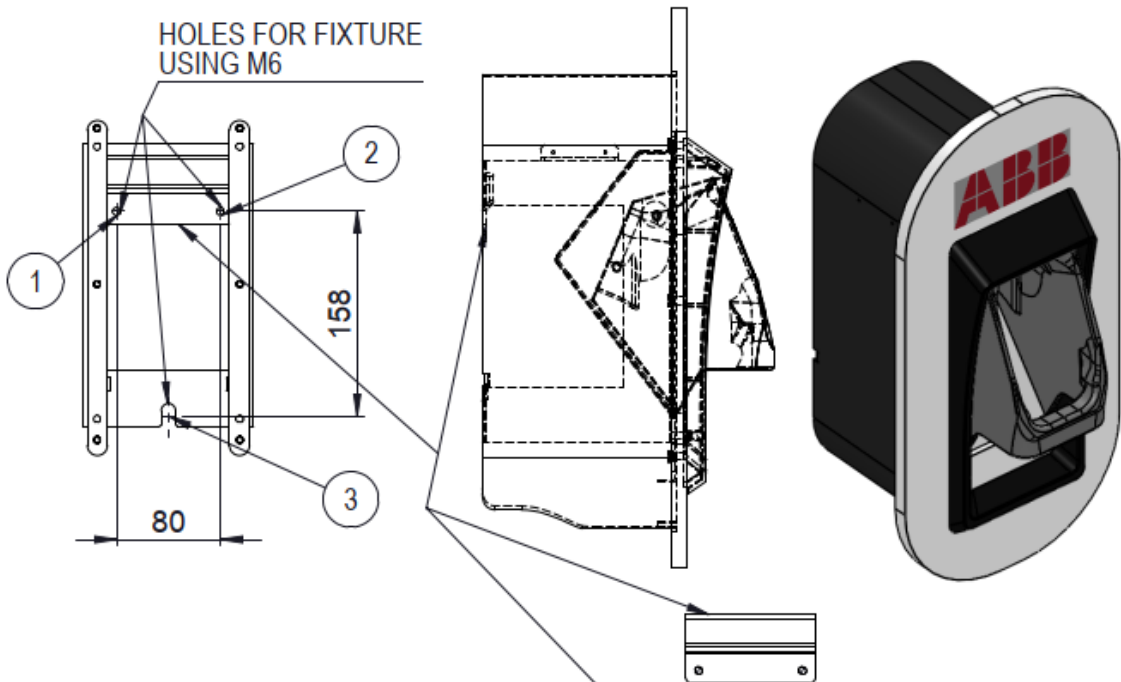


Figure 4: Terra DC wallbox optional Gun holder; front and side view.



- 1) Fix XAB.V2M09.0 on the wall using holes 1 and 2
- 2) Fix the system on the bracket (XAP.V2M09.0)
- 3) Fix Screw on hole number 3

6 Commissioning

6.1 Commissioning preparation

Commissioning is the last phase necessary to get the Terra DC Wallbox operational. The purpose is to check the safe functioning of the charger for its operational purpose.

A certified service engineer from the ABB Service department or a trained engineer by ABB is required to perform the commissioning. During this commissioning, the safety and the functioning of the charger will be tested. ABB Form Titled “**SI-TWBCE-001 UL CSAT Procedure DC Wallbox**”, (Charger System Acceptance Test) should be used for the commissioning process as it contains the checklist and contact information for activation of the charger warranty.

Before the service engineer can start, the following conditions must be met:

- All work described in Preparation, Construction and Placement and connection is complete with Power available.
- A local technician is present for assistance and to switch on the power.
- Internet access must be available in case 4G is not functional.
- A Combo compliant electric vehicle must be available for testing CCS charging.
- A CHAdeMO compliant electric vehicle must be available for testing the CHAdeMO charging.
- Any electric vehicle for instructing the site operator.



NOTICE

Warranty : It is not allowed to move the Terra DC Wallbox, after it is commissioned. In case the Terra DC Wallbox is moved without approval from ABB, the warranty will be considered void. In case of relocation please contact the local ABB Service department.

Commissioning is executed according to the CSAT checklist, this check list can be found in the Helios Suite Service tool that is available to the certified commissioning engineers or their supervising ABB organization. The following data is required for input:

- End-user Contact person (Create a contact if it doesn't exist).
- Charger address (Check the site address, it will be the address the charger was shipped to).
- Coordinates longitude and latitude for plots on the maps. If there are more chargers on 1 location, make sure the coordinates are slightly different (at least 0,0001 degrees) to prevent being displayed on the same location.
- Site name if this is useful for better recognition (example: Shell petrol station Amsterdam).
- External fuse of the charger.
- SAT (Site Acceptance Test) date.

Location remarks (any special remarks about the site, e.g. behind a gate, no photo cameras allowed etc.). Add a picture of the surrounding of the charger, upload the local CAF document A4 on the page of the charger in PDF. Change Deliver status to <SAT>.

After completing the Site Acceptance Test, ABB's Network Operation Center will be triggered to perform a final check on the connection and configuration of the charger.

Upon approval the charger will be operational and initialized for use.

7 Maintenance and Cleaning of the cabinet

7.1 Recommended Periodic maintenance

- A. Following **NFPA-70e** procedures, de-energize unit, open cover, inspect air filter, clean or replace as needed.
- B. Check input connections and terminations for proper torque values
- C. Check Grounding resistance
- D. Exercise input breaker and output DC breakers
- E. Open HMI cover, inspect capacitors and fuse connections.
- F. Clean interior with a HEPA vacuum.
- G. Blow out rear cooling fins and remove any debris
- H. Reassemble unit, energize verify input voltage, perform a charging session.
- I. Using the connected network verify charging session details.

7.2 Cleaning of the cabinet

The Terra DC Wallbox Charger is powder coated. This coating must be kept in good condition.

Clean the Terra DC Wallbox Charger three times a year in the following way:

- Remove rough dirt by spraying with low-pressure tap water.
- Apply a neutral or weak alkaline cleaning solution and let it soak.
- Remove dirt by hand with a non-woven nylon hand pad.
- Rinse thoroughly with tap water.
- Do a check on the coating and on the front cover for damage.



NOTICE

When the Terra DC Wallbox Charger is exposed to rain, it is sufficient to clean it twice a year.



CAUTION

Do not apply high-pressure water jets. Water may leak into the Terra DC Wallbox Charger. If a high-pressure water jet has been used, ensure the inside of the Terra DC Wallbox Charger is dry.

- Only use cleaning agents with a pH value between 6 and 8.
- Do not use cleaning agents with abrasive components.
- Do not use abrasive tools.

8 Technical Data

8.1 Electrical data

AC Input	
AC input voltage range	480 V _{AC} +/- 10% (60Hz)
AC input power connection	3-phase, 480Y/277 V _{AC} : L1, L2, L3, N, GND
Nominal input current and input power rating	32 A / 26.6 kVA at 480V, peak input current: 35 A / 26.6 kVA at 432V
Recommended upstream overcurrent protection device rating	50 A
Power factor	> 0.96
Efficiency	94% at nominal output power
DC output	
Maximum DC output power	24 kW peak; 22.5 kW continuous
DC output voltage range	CCS1: 150 - 920 VDC CHAdeMO: 150 – 500 VDC
Maximum DC output current	60 ADC

General	
DC connection standard	EN61851-23 / DIN 70121 CCS 2 CHAdeMO 1.0
DC cable length	3.5 meters or 7 meters (12 feet or 23 feet)
DC plug type	CCS 1 / CHAdeMO
RFID data	ISO/IEC14443A/B, ISO/IEC15693, NFC reader mode, Mifare, Calypso
RFID system	FeliCa™ 1, NFC reader mode
Network connection	GSM / 4G modem 10/100 Base-T Ethernet

8.2 Mechanical data

Mechanical data	
Dimensions (H x W x D)	770 mm x 585 mm x 300 mm / 30.32" x 23.03" x 11.81"
Weight	70 kg / 154.32lbs
Volume	0,135 m ³
Dimensions including packaging (H X W x D)	650 mm x 1200 mm x 800 mm /25.6" x 47.25" x 31.5"
Weight including packaging	80 kg / 176.37 lbs.
Mechanical impact protection	IK10

8.3 Environment

Environmental data	
Ingression protection	IP54, NEMA 3S; indoor and outdoor
Temperature range – Operation	-35°C to + 55°C /-31F to + 131F (derating applies between 45°C and 55°C / 113F-131F)
Temperature range - Storage	-40 °C to +70 °C / -40F to +158F
Humidity	20% - 95% RH - non-condensing
Operational noise level	55 dBA @25°C
Altitude	2500 m max.

8.4 Certifications

EMC: EN 61000-6-4 Class A emission; EN 61000-6-3 Class B emission; EN 61000-6-2 immunity.

LVD: IEC 61851-23, IEC 61851-1, IEC 62196, IEC 60950, EN 61010, EN 60335 (see certificates)

RFID: ETSI EN 300 330

- **UL 2202**
- **CSA STD C22.2 No. 107.1**
- **FCC Part 15 Class A**

9 Contact information



NOTICE

In case of problems

Please contact your local ABB Service organization or Service partner for first line problem analysis and solving. In case they cannot solve the problem, they will contact the second line Service organization.

ABB in your country

Please contact ABB in your country for sales, delivery and service information.

ABB EV Infrastructure USA

ABB Inc.
950 E Elliott Rd
Tempe, AZ 85284 Suite 100
United States
Phone: 800-435-7365
E-mail: US-evci@us.abb.com

ABB EV Infrastructure Canada

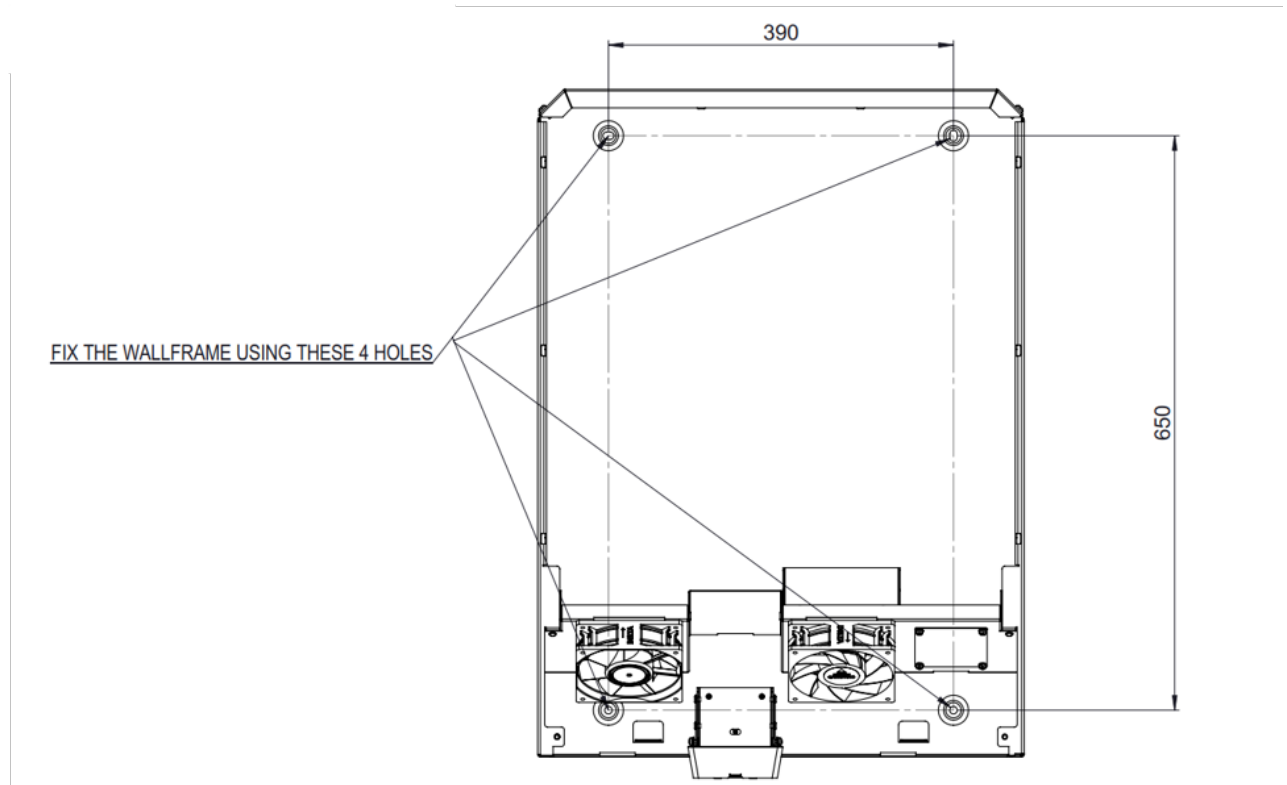
ABB Inc.
800 Hymus Boulevard
Saint-Laurent, QC H4S 0B5
Canada
Phone: 800-435-7365
E-mail: CA-evci@abb.com

ABB EV Infrastructure Global

Address Heertjeslaan 6
2629 JG, Delft
The Netherlands
Telephone +31 70 307 62 00
Mail info.evi@nl.abb.com

10 Appendix A – Mounting points

10.1 Terra DC Wallbox Charger wall mounting



12 Appendix C – Pedestal requirements

Any pedestal solution designed for Terra DC Wallbox needs to fulfill the specific ISO standards for civil constructions (note: specific local regulations may apply).

Additionally, whereas no specific constraint is provided by local regulations, the minimum set of requirements necessary to provide a safe installation are listed in the table below to be verified in the temperature range between -50°C - +60°C:

Minimum Wind load resistance	100km/h
Minimum compression load capability (applied on center of mass of the WB)	4kN
Side / Back / frontal impact MAX (applied on the pedestal/WB) higher point	3kN
Pulling /Pushing force applied (to gun holders if they are mechanically connected to same structure and external to the WB area)	3kN
Min / Max distance of gun holder from WB (if mechanically connected to pedestal structure)	300mm / 1000mm
Rust protection paint	Yes
Minimum clearance areas side / top / bottom around the charger	300mm
Recommended foundation requirements (min tilting torque)	To be designed considering the max loads in each direction
Vibration test required on the full system	According to procedure described in IEC 60068-2-27: 2008 and IEC 60068-2-6: 2007
Electrical ground connection	To the chassis of the DCWB